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THE FORMULATION AND EVALUATION OF AGRICULTURAL PROJECTS IN AFRICA

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1. INTRODUCTION

1. A farm is not a factory. Agriculture is full of unpredictable factors. Apart from seasonal and time factors which complicate or extend the production process, apart from the ever present risk of climatic changes influencing production, apart from the fact that many agricultural products are joint products[1] and are thus difficult to plan, the location of every agricultural project gives rise to specific problems many of which are unknown to manufacturing industry. A steel industry does not depend upon soils, upon climate or upon topography as does an agricultural project. All too often agricultural projects have failed because they were planned as if they were factories.

2. In addition to the many unpredictable factors which are a feature of agricultural projects a farm is a home as well as a place of work and human reactions are thus of much greater importance than they are in the planning of factories.

3. The agricultural areas of the world are littered with projects which have failed. There are projects without markets, projects without crops, projects without rainfall and projects without people. They have all usually failed for one reason. Lack of comprehensive planning. Engineers fail to consult with economists, economists fail to consult with sociologists, the failures are due to enthusiastic specialists and well intentioned amateurs who fail to realise the breadth of the problem of agricultural development.

1/ mutton and wool, cotton and cotton seed etc.

4. The object of this paper is to emphasize some of the special characteristics of agricultural projects particularly in Africa and put forward a general outline for their formulation and appraisal with the hope that more projects in future will be examined in a comprehensive fashion. Although some of the details may not be applicable, or may not be available, for the wide variety of projects which fall within the agricultural field the general considerations should apply to all of them.

5. There are however certain facts and principles which should be borne in mind when formulating agricultural projects. These are:

a) There is often less basic information relating to the physical environment and to social factors in Africa than in other continents. A great deal of research is therefore required and the greatest care must be exercised to ensure that schemes are based on sound information. This situation means that agricultural projects may have to proceed more slowly than they do in other areas. While the desire exists in Africa to develop as rapidly as possible this development must be related to knowledge of the environment or else the effects may be detrimental rather than beneficial to the economy.

b) African countries are poor. They should put resources primarily into those activities which give rise to further growth.

c) Optimum growth rates will not be achieved if resources are widely dispersed. They should be used in selected areas on factors which will react upon each other and thus stimulate further growth.

d) Priority should be given to self-liquidating projects.

e) Land and labour are relatively plentiful in Africa. Capital and management are relatively scarce, the latter probably more so than the former. Planning should be in terms of high output from management and capital rather than from land labour and should aim at increasing labour productivity.

2. FORMULATION AND EVALUATION OF PROJECTS

6. The FAO, the United Nations and the International Bank for Reconstruction and Development 1/ have prepared a general outline for a project statement over ten years ago. Projects can be outlined in many ways, and there have since been various modifications of this outline to fit special cases, but the following eight points, as outlined at Lahore, seem to provide as good a framework as any for the purposes of the present discussion:

I. Review of resources available and their proposed development.

II. Statement of Engineering or other physical aspects of the proposed development, with blue-prints and estimates of costs involved, total and by time periods.

III. Technical and economic appraisal (agricultural, industrial, etc.) of the prospective physical productivity and prospective income of the proposed development, of technical problems involved in utilizing its resources, and of prospective speed of development, and of markets for the products.

IV. Proposed administrative arrangements for conducting the development.

V. Proposed arrangements for financing the project.

VI. Relation of the project to the national economic and the national development programme.

VII. Appraisal of prospective costs and benefits, direct and indirect both in total and by time periods.

VIII. Summary statement of all aspects of the project, for administrative and financial consideration.

7. This paper, which is intended as a guide to discussion rather than a general presentation of the subject, attempts to comment on the various points as they apply to agricultural projects in Africa and not to elaborate upon general principles which apply to all projects, whether manufacturing or agricultural.

I. REVIEW OF RESOURCES

8. An adequate knowledge of the physical and human geography of the area is essential before embarking upon any agricultural project. The many specialists involved in such a scheme are unlikely to be able to see it in proper perspective and a comprehensive picture of resources is therefore essential. These can be sub-divided into:

The Physical Background

9. General description of the area - climate, geology, soils, vegetation, topography, morphology.

10. Each development project is likely to require separate investigation into its physical background. Special surveys may be required, while research results which do not go back for at least 4 or 5 years must be regarded as dubious.

The Economic Background

11. Strange as it may seem new projects are often initiated without knowledge of existing economic activity. It should be obvious that attempts to change or transform economic patterns of activity must be preceded by a knowledge of what is to be changed.

a) General economic factors. Brief economic history of the area. Current form of economic activity. Land tenure, area and details of crops, employment immigration or emigration, population numbers & structure, income and expenditure of area, communication distributive channels.

b) Detailed economic factors. The farm unit, area, type of crops, description of work schedule, employment, farm expenditure and income, farm management, skills, special problems.

The Social Background

12. While industrial projects usually deal with people who have abandoned their traditional background and are thus particularly malleable, agricultural projects usually deal with people in their traditional environment. Social attitudes and social ties should thus be of vital importance to the agricultural planner. It is useless, for example to tell male farmers in a matrilineal society that their sons will benefit by their expenditure of effort on soil conservation, while it would be fruitless to encourage cattle owners to sell more of their cattle if there is no other way of saving or of acquiring wives. A man, a family a clan has traditional functions to

perform in the production process and traditional rights in the disposal of produce. Social obligations are of great significance and although perhaps amenable to change as the economic structure changes they are not relationships which can be dismissed without detailed consideration. Probably more projects in Africa have failed for lack of considering social relationships than for any other reason.

Factors to consider are: political issues, kinship system, rights, obligations, taboos, incentives, education, contacts with outsiders, health, welfare.

II. DESCRIPTION OF PROPOSED DEVELOPMENT

13. Agricultural projects can take many forms. Apart from such projects as irrigation, estate and peasant settlement schemes there are such projects as extension programmes, marketing boards, abattoirs, cooperatives, credit programmes as well as disease control measures. Some of these projects are more amenable to evaluation than others but in every case some attempt at economic assessment should be made.

Location and Size

14. The location of the project should be at that point at which transport costs are lowest. Where processing is involved which entails considerable loss of weight the best site is likely to be that of the raw material. Where little or no loss is involved the best site is likely to be near the market. On the other hand if the product is subject to deterioration or damage during transport, processing will have to take place near the origin of the product. Several projects in Africa have been badly sited through the failure to recognise the importance of transport costs.

15. The size of the project is a problem of balance between optimum throughputs and availability of markets. In several projects as production increases unit costs are lowered but markets may not be available. It is important to ensure that technical specialists who ignore marketing factors do not handicap the project with factors, which while eventually leading to low unit costs when production can be absorbed, for a fairly long period incur high overhead costs. There may of course, be advantages in undertaking large projects in stages.

III. TECHNICAL AND ECONOMIC APPRAISAL

Technical Factors

16. An economist can all too easily feel that technical problems are not his concern and thus must accept the costs put forward by scientists without question. The size of an abattoir, the quality of roads, the type and size of tractors, the size of dams and canals all entail economic decisions which should not be left entirely to the scientist. Scientists are more often than not perfectionists and tend to build and provide the biggest and the best. Though this may be justified in the long run it may mean misuse of scarce resources in the intervening period and therefore entails waste.

17. While the technician must be the ultimate arbiter of the type of equipment to be used discussions with several will often bring out differences of opinion which may have a bearing in the economics of the project.

18. All too often technical and engineering costs are revised upwards. Apart from inflation the greatest care has to be taken to ensure that mistakes are not made in the first instance. These should be thoroughly

scrutinized and account taken of all too frequent lack of basic information which forces costs upwards. A contingency allowance of at least 10% is usually advisable.

Area involved

19. Details of area involved. Productive and unproductive land. Fallow land. On irrigation projects unproductive land is often as high as 1/3 of the irrigable area and this clearly puts a tremendous cost burden onto productive land. It is important to reduce the area of canals, roads, land used for building as well as uncultiveable land, and as far as possible to site villages, factories etc. on unproductive land or on non-irrigated land close to the project.

Cost Analysis

20. Details of the manner in which invested capital is to be spent, whether on wages, salaries, construction, machinery, raw materials and transportation together with whether these inputs will be imported or obtained locally. Details should be grouped under direct costs and indirect costs and time periods should be listed. It is useful to show the grouping of costs as percentages of total investment. If inputs are to be obtained locally there should be some indication as to whether they were previously unemployed or whether they would have to be drawn from other enterprises. Clearly if resources were previously unemployed there is likely to be a great gain to the economy.

Yields

21. Productivity of crops and stock are of crucial importance. It is important to have evidence of yields related to costs for obtaining these yields. Experimental evidence should be obtained over a period

of at least 4 to 5 years. Conditions on experimental farms are however very artificial and must be written down very heavily. Agricultural Extension staff are also invariably very optimistic and their yield suggestions should usually also be written down. A rule of thumb method is to expect yields of about 1/3 of those yields obtained regularly under experimental conditions or about 2/3 extension officers' predictions. These would apply for earlier years of project at least.

22. Where livestock is concerned low offtake figures do not mean that production can easily be increased. "On farm" consumption is often heavier than thought, markets are not always available, while social taboos are strong. It might not be economic for owners to sell cattle if there is plenty of land available and no alternative form of saving.

Pests and Diseases

23. The costs of control of these can be heavy and can encounter non-rational objections from the people being assisted. It might not be worthwhile controlling pests and diseases if the costs are too high or if markets are not available.

24. Although certain pests and diseases may not be found in the experimental stages or when the scheme is small, there is always a strong possibility that they will appear when it becomes larger. This factor should not be overlooked.

Total Production

25. Quantities likely to be consumed on farms should be noted. Will this substitute or add to previous consumption ? Types and grades. Total sales and gross income.

Prices and Markets

26. Incorrect and optimistic price costing can have disastrous results upon a scheme. All too often markets for products are ignored or insufficiently considered. Most price forecasts will show relatively declining prices but too much emphasis should not always be given to them, as forecasts for most agricultural products would discourage the production of almost every type of crop. It is important however to choose the products whose prices are declining least and to bear in mind the fact that costs of production in Africa may well be lower than on other continents. This is likely to be especially true on peasant production schemes where cash outlays are minimal.

27. Techniques of forecasting can be found in some of the publications listed at the end of the paper[2/] but it should be borne in mind that when forecasting for domestic markets in Africa the greatest changes in consumption are likely to some about as people move from the subsistance to he monetary sector of the economy and studies of income and price elasticities of demand are not as important as they are in fully commercialized economics.

Labour

28. It is of vital importance to gain the support of the people for the scheme rather than have it imposed upon them. If the people are in favour of the project costs are likely to be reduced and efficiency increased. It might be possible to tie the scheme to certain prestige awards (e.g. Progressive farmers schemes in some countries award badges and certificates of which the owners are very proud), especially so as

independent countries should be able to initiate e.g. pioneer awards to farmers.

29. Details of working population, current wages or incomes, numbers involved and number available, structure of labour force, education, skills.

Transport Costs

30. Details should be given of costs of transport, handling insurance, of losses on transit, costs at various levels of production, effect of backloads and frequency of transport. Type of roads may well affect costs of transport considerably while special types of transport might be required.

Expenditure Patterns

31. The way in which additional income from the project is spent is an important consideration. There may well be a need to provide consumer goods in the area if traders are not to take advantage of increased demands, while if the demand is very great, as in very large projects, special steps might have to be taken to avoid general inflation.

32. In addition government will be able to collect back a considerable part of its expenditure by means of indirect taxes on goods purchased. For an assessment of how much might be collected back considerable detail with regard to the pattern of family expenditure is required.

Associated Development

33. Considerable investment may be required in schools, clinics, stores, shops, homes, experiment stations, extension services and administration on the project area. These may not form part of the national development plan. These costs should all show some return

but it is important to ensure that non-productive investment should be kept as low as possible. Housing is not always productive especially at lower income levels and many countries cannot afford such expenditure. In any case housing provided for labourers is often unsuitable and therefore not desired. It is often best to let labourers construct their own houses under some supervision and perhaps with some assistance. Where possible unusued human resources should be mobilized via community development projects to erect schools, clinics, homes and community centres. It is preferable, if assistance is to be given by government that it should be given in a once for all form rather than in an annual subsidy. The people should be responsible for recurrent expenditure for they will thus be more willing to follow improved production methodes in order to obtain the income to pay for these financial obligations.

Speed of Project

34. While the project should proceed as rapidly as possible it should be borne in mind that basic information is often lacking so that serious mistakes can be made. Where this information is lacking it is essential to move forward slowly. Experiment and pilot projects should be established on small areas and with limited resources. Where settlers are eventually to be established it is also desirable to experiment with a handful of them to ascertain what acerages they can handle and what other human problems might arise. These settlers should be offered a basic wage plus an incentive bonus.

35. Where heavy expenditure on capital is involved the project should not be initiated until all the serious problems have been overcome as the cumulative interest charges on delayed projects become an impossible burden. Once started they should be finished as rapidly as possible.

IV. ADMINISTRATIVE ARRANGEMENTS

36. If the project is a big one it might be wise to set up a special authority to manage it as in this way responsiblity can be more easily pin-pointed than it can if it were run by the civil service. It should also ensure that there is greater continuity of management than would exist in a civil service. It is important, that a minimum of political interference in the day to day running of the organisation takes place. There is, however, a great need for internal controls to ensure from time to time that mistakes are not being made. Care may be necessary to see that special agencies set up to run large projects do not enjoy disproportionate advantage compared with related government departments.

37. Where several government departments are involved a general supervisory committee will, of course, have to be established. It is important that it should keep a watchful eye on all developments and be able to report to the highest level, without danger of victimization, if things are going wrong.

V. FINANCE

38. The financing of the project will of course, have to be decided beforehand by those responsible, but it is important not to overlook recurrent commitments which are likely to stretch over a long period. In the case of agricultural projects involving educational and other supporting services, e.g. credit, the recurrent costs may often be more important than the initial capital outlay.

39. Details of the source of capital, how it is to be repaid, interest charges, need for individual or project credit should be listed as well as the phasing of it.

40. Where the investment is semi-permanent and no amortisation is demanded by the lenders, no time limit for amortisation is really necessary. In the case of inflation this could render a time limit valueless. The best method is to collect whatever can be collected from the beneficiaries. On the other hand if, as is likely, the evaluation is to be related to competing projects an amortisation period may well be necessary for comparative purposes.

VI. IMPACT ON THE ECONOMY

41. Other projects may well be affected by this one and the effects should be listed. Information should also be given as to the affects on the balance of payments, on employment and inflation and the estimated increase on the Gross Domestic Product.

42. Details of changes in governement policy by way of import or export controls, tariffs and taxation should also be given.

VII. APPRAISAL OF COSTS AND BENEFITS

43. Methods of preparing cost/benefit analysises are generally known and are available in the publications listed at the end of this paper[2/]. The cost benefit ratio is considered to be of value, rather as a basis of comparison between a number of projects which are under considaretion, than for its intrinsic value for assessing the likely profitability of a project.

44. When individual accounts are being prepared care should be taken to avoid, in the first instance a charge for factors for which no cash payment has been made (e.g. family labour, interest on capital, land). It is possible that no alternative occupation might be available for these factors in which case no charge should be made. Under African conditions this would certainly not be true for capital but is likely to be true for labour (en masse, not for the individual), and could be true for land (unused swamp or desert).

45. The indirect costs and benefits may well outweigh their direct counterparts. Research is required into the multiplier effect and the impact it will have upon government revenue and upon the economy generally, and as far as possible, these should be quantified.

46. It sould be borne in mind that in Africa there are plenty of unused or underutilized resources especially labour and land so that the real cost of employing them is nil or negligible.

47. It should be borne in mind that a favourable cost/benefit analysis does not necessarily justify initiation of a project but that comparative studies of other projects should be made.

VIII. SUMMARY

48. A brief summary of the foregoing. This applies to all projects and no special points arise in the case of agricultural projects which would distinguish them from projects in other fields.

SUGGESTED READING

1. Formulation & Economic Appraisal of Development Projects.
UN 1950 Lectures delivered at the Asian Centre on Agricultural & Allied Projects - Lahore Pakistan.

2. Manual on Economic Development Projects
UN New York 1955 ST/ECAFE/SER.F/7

3. Multi-Purpose River Basin Development - Manual of River Basin Planning
UN New York 1955 ST/ECAFE/SER.F/7.

4. Methods of Farm Management Investigation by W. Y. Yang.
FAO Agricultural Development Paper N° 64 Rome 1958.

5. The Farm as a Business. Ministry of Agriculture & Fisheries
HMSO 1954.

6. "Proposed Practices for Economic Analyses of River Basin Projects"
Federal Inter Agency River Basin Committee Washington D.C. 1950.